Having thus described the preferred embodiments, the invention is now claimed to be:

1.   An abstraction layer for a database containing database records each including a plurality of fields stored in one or more tables, the fields being associated with the record by a key disposed in at least one key column of each of the one or more tables, the abstraction layer including:

a key column identifier that identifies the at least one key column; and

one or more metadata tables containing metadata relating to the database, the one or more metadata tables including at least:

a controls table containing control records corresponding to fields of the database, the control record for each field including at least a control key associating the control record with the field and at least one metadatum corresponding to the field.

2.   The abstraction layer as set forth in claim 1, wherein the at least one metadatum of at least one control record includes a datatype index value indicative of a datatype of the corresponding field, and the one or more metadata tables further include:

a datatypes table associating a plurality of datatype indices with datatypes.

3.   The abstraction layer as set forth in claim 2, wherein the datatypes of the datatypes table are selected from a group including: a character datatype, a numeric datatype, a text data type, a date data type, a time datatype, and a timestamp datatype.

1   **4.**   The abstraction layer as set forth in claim **2**, wherein the one or more

2   metadata tables further include:

3   an operators table associating a database operation with a database type index

4   value and with a corresponding display operator.

1   **5.**   The abstraction layer as set forth in claim **4**, wherein the operators table

2   further associates the database operation with a corresponding second display operator,

3   and the operators table further includes:

4   a language field associating a different language with each of the corresponding

5   display operator and the corresponding second display operator, whereby the database

6   operation has associated therewith display operators in at least two different languages.

1   **6.**   The abstraction layer as set forth in claim **2**, wherein the datatype index

2   value indicates that the corresponding field is numeric, and the at least one metadatum

3   further includes:

4   a sub-datatype index value indicative of a type of numeric value of the

5   corresponding field, the sub-datatype index value being selected from a group including

6   at least integer and floating-point numeric value types.

1   **7.**   The abstraction layer as set forth in claim **1**, wherein the one or more

2   tables includes at least two tables, and the control record for each field further includes a

3   table name that in combination with the control key associates the control record with the

4   field.

1   8.   The abstraction layer as set forth in claim 7, wherein the one or more

2   metadata tables further include:

3   a category table associating each of the at least two tables with one or more table

4   characteristics.

1   9.   The abstraction layer as set forth in claim 1, wherein the at least one

2   metadatum of at least one control record includes a search flag indicative of an type of

3   searching executable on the corresponding field.

1   10.   The abstraction layer as set forth in claim 9, wherein the search flag has a

2   value indicating that the corresponding field is searchable by a text search, and the at

3   least one metadatum further includes:

4   a text search field region identifier indicating a portion of the corresponding field

5   that is searchable by the text search.

1   11.   The abstraction layer as set forth in claim 9, wherein the search flag has a

2   value indicating that the corresponding field is searchable by an SQL query, and the at

3   least one metadatum further includes:

4   at least one SQL query format indicator indicative of an allowable SQL query

5   format.

1   12.   The abstraction layer as set forth in claim 9, wherein the at least one

2   metadatum further includes:

3   a case-sensitivity indicator that indicates whether searching on the corresponding

4   field is case-sensitive.

1   **13.**   The abstraction layer as set forth in claim **1**, wherein the at least one

2   metadatum of at least one control record includes a sort flag identifying whether sorting

3   can be done on the corresponding field.

1   **14.**   The abstraction layer as set forth in claim **1**, wherein the at least one

2   metadatum of at least one control record includes a display flag identifying whether the

3   corresponding field is displayable.

1   **15.**   The abstraction layer as set forth in claim **1**, wherein the one or more

2   metadata tables further includes:

3   a displayable table associating a plurality of display names with a field of the

4   database through the control key of the controls table, the plurality of display names each

5   corresponding to a different language whereby the display name is multilingual.

1   **16.**   The abstraction layer as set forth in claim **1**, wherein the one or more

2   metadata tables further includes:

3   a syntax table associating syntactically valid inputs with a field of the database

4   through the control key of the control record corresponding to the field.

1   **17.**   The abstraction layer as set forth in claim **16**, wherein the at least one

2   metadatum further includes:

3   a picklist flag indicating whether the entries of the syntax table are displayable as

4   selections of an input of a GUI dialog box.

1   **18.**   The abstraction layer as set forth in claim **1**, wherein the one or more

2   metadata tables further includes:

3   an aliases table associating alias names with fields of the database through the

4   control key of the control record corresponding to the field.

1   **19.**   The abstraction layer as set forth in claim **18**, wherein the aliases table

2   associates a plurality of alias names with at least one field of the database, each of the

3   plurality of alias names having a language parameter associated therewith.

1   **20.**   The abstraction layer as set forth in claim **1**, wherein the one or more

2   metadata tables further includes:

3   a patterns table associating one or more search patterns with a field of the

4   database through the control key of the control record corresponding to the field.

1   **21.**   A method for accessing a database containing database records each

2   including a plurality of fields stored in one or more tables, the method including:

3   formulating a database access command using metadata related to the database

4   contained in an abstraction layer, the metadata for each database field being accessible

5   using an abstraction layer control record associated with the database field; and

6   executing the formulated database access command to access the database.

1   **22.**   The method as set forth in claim **21**, wherein the abstraction layer includes

2 at least one translation table that includes equivalent text in a plurality of languages

3 associated with at least one database field, the formulating of the database access

4 command including:

5   accessing the abstraction layer using a key that includes at least a field identifier

6 and a language selection to retrieve the equivalent text in the selected language.

1   **23.**   The method as set forth in claim **22**, wherein the key further includes:

2   a database access operator, the equivalent text being a displayable name for the

3 database access operator.

1   **24.**   The method as set forth in claim **21**, wherein the abstraction layer

2 includes:

3   a controls table containing the control records of the database fields, each control

4 record including a field key; and

5   at least one metadata table containing records corresponding to database fields

6 and linked to the control record by the field key.

1   **25.**   The method as set forth in claim **21**, wherein the abstraction layer

2 includes:

3   a controls table containing the control records of the database fields, each control

4 record including at least one index metadatum; and

5   at least one additional metadata table containing indexed metadata associable with

6   database fields by the at least one index metadatum of the control records.

1   **26.**   The method as set forth in claim **21**, further including:

2   executing a user application program, the formulating of a database access

3   command being performed as an operation of the executing user application program.

1   **27.**   An article of manufacture comprising one or more program storage media

2   readable by a computer and embodying at least an abstraction layer for facilitating

3   accessing a database containing database records each including a plurality of fields

4   stored in one or more tables, the abstraction layer including:

5   a control table containing control records corresponding to database fields, each

6   control record containing metadata associated with the corresponding database field, and

7   at least one additional table containing additional metadata, each database field

8   being selectively associated with one or more selected portions of the additional metadata

9   through metadata contained in the control record corresponding to the database field.

1   **28.**   The article of manufacture as set forth in claim **27**, wherein the article of

2   manufacture further embodies one or more instructions executable by the computer to

3   perform a method for accessing the database, the method including:

4   formulating a database access command; and

5   during the formulating, accessing an abstraction layer to identify at least one

6   constraint on the database access command.

1   **29.**   The article of manufacture as set forth in claim **28**, wherein the identified

2   constraint on the database access command is selected from a group consisting of: a text

3   string in a selected language that is incorporated into the database access command, a

4   datatype constraint, a search pattern, a search constraint, a sorting constraint, and a

5   display constraint.

1   **30.**   The article of manufacture as set forth in claim **28**, wherein the article of

2   manufacture further embodies a user application program executable by the computer, the

3   executing user application program being operatively linked with the method for

4   accessing the database.

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